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(54) Title: MODULAR SYSTEM OF DIETARY SUPPLEMENT COMPOSITIONS

(57) Abstract: The invention pertains to a dietary supplement composition, comprising at least two compositions A and B which are to be taken at different points in time, wherein composition A consists essentially of water soluble vitamins and composition B consists essentially of fat soluble vitamins. Composition A is an energy-rich composition, comprised of water soluble vitamins, supplemented with further ingredients and minerals, which is taken in the morning and preferably immediately after breakfast. Composition B is a composition for recovery of the cells in the rest phase (i.e. during the night), comprised of fat soluble vitamins, supplemented with other ingredients and minerals, which is taken in the evening and preferably immediately after dinner. Composition A comprises as vitamins predominantly vitamin C, vitamin B-1, vitamin B-2, vitamin B-3, vitamin B-5, vitamin B-6, vitamin B-12, vitamin B-15, and vitamin H, and composition B comprises as vitamins predominantly vitamin A, provitamin A, vitamin C, vitamin D3, and vitamin K1.

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Dietary supplement composition

The present invention relates to a novel dietary supplement composition
5 comprising vitamins, minerals and possible other health-stimulating substances, such as anti-oxidants. More in particular, the invention relates to a dietary supplement composition which is comprised of two or more different independent compositions which are to be taken at different points in time by the user in order to reach an optimum health-effect.

Vitamins and mineralen are essential building materials for the renewal of healthy
10 cells and white blood corpuscles. They reject toxic substances, control the level of cholesterol, assist in the digestion and provide for optimal functioning of the skin, nerves, muscles and hormones, and strengthen the defence system.

Irregular eating habits, the decline of the quality of the environment and the day-to-day pressure of work contribute to the harm of the defence system. Since our current nutrition
15 is no longer adequate, it is important to supplement the lack of vitamins and minerals with a dietary supplement composition in order to reach the necessary daily amounts which preferably are also the optimum amounts.

Anti-oxidants are important substances which offer protection to free radicals. They are produced within the body and their concentration is increased by pollution, sunlight,
20 alcohol and smoke of cigarettes. Too many free radicals may damage the cells in the body and may thus cause various degeneration diseases in the long term.

Phyto nutrients are natural nutritive substances with active parts from fruit, vegetables, grains, herbs or soya. These nutrients provide optimum protection to free radicals and at the same time they strengthen the defence system to viruses and bacterial infections.

25 Research has revealed that the biorhythm of the human body is distinct in the uptake and removal of vitamins, minerals and anti-oxidants. This knowledge resulted in the development of a formula comprising the proper amounts for an optimum condition and a strong defence system in the body during the day and for rest and recuperation during the night.

30 According to the invention a dietary supplement composition is now provided which both in the matter of the dosage and composition comprises a very complete formula of multivitamins, multiminerals and anti-oxidants, which is very useful for the human health promotion.

The dietary supplement composition according to the invention is characterised in
35 that it comprises at least two compositions A and B which are to be taken at different points in

time, wherein composition A consists essentially of water soluble vitamins and composition B consists essentially of fat soluble vitamins.

Composition A is an energy-rich composition, which is comprised of water soluble vitamins, preferably supplemented with one or more minerals and other usual health-
5 stimulating substances. Composition B is a composition for recovery of the cellen in the rest phase (i.e. during the night), comprised of fat soluble vitamins, preferably supplemented with one or more minerals and other usual ingredients for this purpose.

Composition A is taken in the morning and preferably immerdiately after breakfast and composition B is taken in the evening, i.e. about 9-17 hours after composition A.
10 Preferably, composition B is taken immediately after dinner.

Many varieties of dietary supplement compositions are known both from literature and the actual practice, among which dietary supplement compositions predominantly consisting of vitamins and minerals and dietary supplement compositions, which are comprised of separate modules which are to be taken at different points in time. For example,
15 U.S. Patents Nos. 5,948,443 and 5,976,568 disclose a total modular system of multivitamin- and mineral supplements composed of 7 modules for the promotion of public health and in particular the prevention and treatment of heart- and vascular diseases. The module formulations provide nutrients in suitable amounts to the morning and evening meals to obtain maximum absorption which is inter alia caused by administering a dose in the morning and a
20 dose in the evening.

However, none of the references describes or suggests a dietary supplement composition according to the invention where the composition provides a strict separation between Composition A with the water soluble vitamins in the morning (at or around breakfast) and Composition B with the fat soluble vitamins in the evening (at or around dinner). As far as
25 the inventor is aware, such strict separation is not made in the dietary supplement compositions which are known in actual practice. According to the aforementioned U.S. Patents a "module" is defined as a separate and distinct combination of vitamin-mineral and other health promoting compounds which are directed to specific target populations. In the present invention the same definition of "module" is used as the occasion arises.

30 According to the invention composition A comprises as vitamins predominantly vitamin C, vitamin B-1, vitamin B-2, vitamin B-3, vitamin B-5, vitamin B-6, vitamin B-12, vitamin B-15, and vitamin H, and composition B comprises as vitamins predominantly vitamin A, provitamin A, vitamin C, vitamin D3, and vitamin K1. All vitamins are brought in a suitable form for administration.

Preferably, Composition A further comprises one or more of the minerals chromium, potassium, copper, magnesium and manganese, in a suitable form for administration. Composition A may advantageously further comprise one or more compounds selected from the group consisting of folic acid, p-aminobenzoic acid, choline, inositol, citrus
 5 bioflavonoids, pycnogenol, lipoic acid, coenzyme Q10, proanthocyanidine, dimethyl-aminoethanol and nordihydroguarese acid, in a suitable form for administration.

Preferably, Composition B further comprises one or more of the minerals borium, calcium, iodine, lithium, magnesium, molybdenum, rubidium, selenium, strontium, vanadium, iron and zinc, in a suitable form for administration. Composition B may further advantageously
 10 comprise taurin and/or tocotrienol, in a suitable form for administration.

The amounts of the various ingredients in the compositions A and B are not very critical and can be easily determined experimentally by a person skilled in the art, preferably taking into account factors such as the specific needs (or deficiencies) of individuals to whom the vitamin preparations according to the invention are intended, and the age and the weight
 15 of these persons.

Suitable amounts of the components for the compositions A and B and possible further compositions, forming part of the dietary supplement composition according to the present invention, are for an effective daily oral dose preferably within the ranges shown in Table 1 below:

water	Vitamin C (Calcium Ascorbate)	50 - 1,000	mg
water	Vitamin B-1(Thiamin)	0.7 - 100	mg
water	Vitamin B-2(Riboflavine)	0.8 - 100	mg
water	Vitamin B-3(Niacinamide\Niacine)	9 - 100	mg
water	Vitamin B-5(Calcium Pantothenate)	5 - 300	mg
water	Vitamin B-6(Pyridoxal 5-Fosphate)	0.7 - 150	mg
water	Vitamin B-12(Cyanocobalamine)	1 - 100	mcg
water	Vitamin B-15(Pangaam acid)	10 - 150	mg
water	Vitamin H (Biotine)	0.15 - 300	mcg
water	Folic acid	50 - 800	mcg
water	Para-aminobenzoic acid (PABA)	15 - 100	mg
water	Choline (Bitartrate)	15 - 150	mg
water	Inositol	10 - 100	mg
water	Citrus Bioflavonoids	12 - 200	mg
water	Pycnogenol	10 - 150	mg
	Lipoic acid	0 - 100	mg
	Coenzyme Q10	5 - 200	mg
	Procyanidine/Proanthocianidine (OPC)	20 - 100	mg
	DMAE (Dimethyl aminoethanol)	0 - 500	mg
	NDGA (Nordihydroguarese acid)	0 - 500	mg
	Chromium (GTF)	10 - 300	mcg
	Potassium	30 - 600	mg
	Copper	0 - 5	mg

	Magnesium	50 - 500	mg
	Manganese	1-12	mg
fat	Vitamin A (Palmitate)	250 - 15,000	ie
fat	Beta Caroteen (Provitamin A)	3 - 40	mg
fat	Vitamin C (Ascorbyl palmitate)	50 - 1,000	mg
fat	Vitamin D3 (Cholecalciferol)	0.5 - 400	ie
fat	Vitamin E (D-Alpha-Tocopherol)	3 - 1500	ie
fat	Vitamin F (Unsaturated fatty acids)	0 - 150	mg
fat	Vitamin K1 (Phytonadione)	0 - 2	mg
	Taurine	10 - 750	mg
	Tocotrienol	5 - 150	mg
	Borium	0 - 10	mg
	Calcium	80 - 1,500	mg
	Iodine	15 - 500	mcg
	Lithium	0 - 1,000	mcg
	Magnesium	50 - 500	mg
	Molybdeen	30 - 500	mcg
	Rubidium	0 - 600	mcg
	Selenium	20 - 1,000	mcg
	Strontium	0 - 10	mg
	Vanadium	0 - 500	mcg
	Iron	1 - 30	mg
	Zinc	5 - 30	mg

The dietary supplement compositions according to the invention may be adapted as far as the composition is concerned to specific target groups (modules). Such modules are for example described in U.S. Patent No. 5,976,568, the content of which is herein incorporated by reference.

- 5 Very suitable, typical basis formulations of a dietary supplement composition according to the invention are for example illustrated in Examples 1 and 2. Other more specific modules are also illustrated in the Examples.

The dietary supplement compositions according to the invention may also be advantageously administered to animals, in particular mammals and especially to pets, such as cats and dogs. The amounts of the compositions A and B mentioned above usually deviate somewhat from the compositions which are taken by humans, but they can be easily optimized by persons skilled in the art based on the present disclosure and their professional skill and knowledge.

15 The dietary supplement compositions according to the present invention may be prepared in a known manner for the skilled person. The preparations, i.e. Compositions A and B, respectively, may be administered in various pharmaceutical forms which are known per se, the oral administration being preferred. The preparations may be administered both in solid and liquid form, preferably in unit dose form, which forms and dosages are fully known to

persons skilled in the art. Suitable solid forms are inter alia capsules, tablets, powders, pastilles and dragees; geschikte vloeibare vormen are for example aqueous solutions of the compositions A and B, respectively, in powder form or sirups.

The present dietary supplement compositions may be advantageously applied for a plurality of indications, such as, for example, the improvement of the total health and condition of human or animal, to early ageing, improvement of the skin, hair and nails, improvement of the stamina, to smoking and/or use of alcohol, to physical and mental stress, for performing well, optimizing the blood quality, to "ups and downs", to periods of fatigue, to absent-mindedness, stimulating muscle-formation, supplementing and formation of building materials, lowering and control of the level of cholesterol, stimulating the healing of sports and other injuries, excessive exposure to sunshine, optimizing the physical energy, and control of body weight.

De invention is illustrated below by the following Examples which, however, are not to be construed as restricting the invention in any respect.

Example 1

A basis dietary supplement composition according to the invention was prepared using the following two compositions:

Composition A

A capsule contains the following ingredients:

Vitamin C (calcium ascorbate)	300	mg
Vitamin B-1 (Thiamine)	25	mg
Vitamin B-2 (Riboflavine)	25	mg
Vitamin B-3 (Niacinamide/Niacine)	50	mg
Vitamin B-5 (Calcium Pantothenate)	50	mg
Vitamin B-6 (Pyridoxal 5-Phosphate)	25	mg
Vitamin B-12 (Cyanocobaltamine)	50	mcg
Vitamin B-15 (Pangamic acid)	25	mg
Vitamin H (Biotin)	100	mcg
Folic acid	400	mcg
Para-aminobenzoic acid (PABA)	50	mg
Choline (Bitartrate)	50	mg
Inositol	50	mg

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	Citrus Bioflavonoids	75 mg
	Pycnogenol	20 mg
	Lipoic acid	5 mg
	Coenzyme Q10	30 mg
5	Proanthocyanidine (Extract of grapestones)	10 mg
	DMAE (Dimethyl aminoethanol)	50 mg
	NDGA (Nordihydroguareseacid)	50 mg
	Chromium (GTF)	100 mcg
	Potassium (Amino Chelate)	100 mg
10	Copper (Gluconate)	2 mg
	Magnesium (Amino Chelate)	150 mg
	Manganese (Amino Chelate)	5 mg

Composition B

15 A capsule contains the following ingredients:

	Vitamin A (Palmitate)	2.666 ie
	β -Carotene (Provitamin A)	15 mg
	Vitamin D3 (Cholecalciferol)	200 ie
	Vitamin E (D- α -Tocoferol)	200 ie
20	Vitamin K1 (Phytonadione)	1 mg
	Vitamin C (Ascorbyl palmitate)	250 mg
	Taurine	250 mg
	Tocotrienol	20 mg
	Borium (Citrate)	1 mg
25	Calcium (Amino Chelate)	250 mg
	Iodine (Kelp)	100 mcg
	Lithium (Citrate)	500 mcg
	Magnesium (Amino Chelate)	150 mcg
	Molybdenum (Molybdate)	200 mcg
30	Rubidium (Amino Chelate)	500 mcg
	Selenium (L-selenomethionine)	200 mcg
	Strontium (Citrate)	1 mg
	Vanadium (Ammonium vanadate)	500 mcg
	Iron (Fumarate)	10 mg

Zinc (Citrate)

15 mg

Composition A is a energy-rich composition containing water soluble vitamins supplemented with other ingredients and minerals, which are taken in the morning and preferably immediately after breakfast. Composition B is a composition for recuperation of the cells in the rest phase (i.e. during the night), containing fat soluble vitamins, supplemented with other ingredients and mineralen, which are taken in the evening and preferably immediately after dinner.

10

Examples 2 to 7

These Examples illustrate in the following Table some specific modules of dietary supplement compositions according to the present invention, always consisting of an energy rich Composition or Complex A containing water soluble vitamins and other ingredients, and a Composition or Complex B for the recuperation of the cells in the rest phase, containing fat soluble vitamins. Composition 1 is preferably taken in the morning, for example at breakfast, whereas composition B is preferably taken 9-17 hours later, and more preferably immediately after dinner.

Example 2 illustrates a basis formulation, as does Example 1, whereas Examples 3 to 6 illustrate a module for men, women, children from 1 year of age, adults in the age of 50+, and a module for sportsmen, respectively.

Example 2

Basis formulation		Complex A		Complex B		PM
			AM			
water	Vitamin C (Calcium Ascorbate)		300 mg	fat	Vitamin A (Palmitate)	2.666 ie
water	Vitamin B-1 (Thiamine)		25 mg	fat	Beta Carotene (Provitamin A)	15 mg
water	Vitamin B-2 (Riboflavin)		25 mg	fat	Vitamin C (Ascorbyl Palmitate)	250 mg
water	Vitamin B-3 (Niacinamide/Niacin)		50 mg	fat	Vitamin D3 (Cholecalciferol)	200 ie
water	Vitamin B-5 (Pantothenic Acid)		50 mg	fat	Vitamin E (D-Alpha-Tocopherol)	200 ie
water	Vitamin B-6 (Pyridoxine-5-Phos.)		25 mg	fat	Vitamin F (Unsaturated Fatty Acids)	10 mg
water	Vitamin B-12 (Cyanocobalamin)		25 mcg	fat	Vitamin K1 (Phytonadione)	1 mg
water	Vitamin B-15 (Pangamic Acid)		25 mg		Taurine	25 mg
water	Vitamin H (Biotin)		150 mcg		Tocotrienol	20 mg
water	Folic Acid		400 mcg		Boron (Citrate)	1 mg
water	Para-Aminobenzoic Acid (PABA)		50 mg		Calcium (Amino Acid Chelate)	250 mg
water	Choline (Bitartrate)		50 mg		Iodine (Kelp)	100 mcg
water	Inositol		50 mg		Lithium (Citrate)	500 mcg
water	Citrus Bioflavonoids		75 mg		Magnesium (Amino Acid Chelate)	150 mg
water	Pycnogenol		20 mg		Molybdenum (Molybdate)	200 mcg
	Lipoic Acid		5 mg		Rubidium (Amino Acid Chelate)	500 mcg
	Coenzyme Q10		30 mg		Selenium (L-Selenomethionine)	200 mcg
	Procyanidine/Proanthocyanidine (OPC)		50 mg		Strontium (Citrate)	1 mg
	DMAE (Dimethyl aminoethanol)		50 mg		Vanadium (Ammonium Vanadate)	500 mcg
	NDGA (Nordihydroguaretic Acid)		50 mg		Iron (Fumarate)	10 mg
	Chromium (GTF)		100 mcg		Zinc (Citrate)	15 mg
	Potassium (Amino Acid Chelate)		100 mg			
	Copper (Gluconate)		2 mg			
	Magnesium (Amino Acid Chelate)		150 mg			
	Manganese (Amino Acid Chelate)		5 mg			

Example 3

Men's formulation

Complex A		AM	Complex B		PM
water	Vitamin C (Calcium Ascorbate)	250 mg	Vitamin A (Palmitate)	5.000	ie
water	Vitamin B-1 (Thiamine)	25 mg	Beta Carotene (Provitamin A)	10	mg
water	Vitamin B-2 (Riboflavin)	25 mg	Vitamin C (Ascorbyl Palmitate)	250	mg
water	Vitamin B-3 (Niacinamide/Niacin)	50 mg	Vitamin D3 (Cholecalciferol)	200	ie
water	Vitamin B-5 (Pantothenic Acid)	50 mg	Vitamin E (D-Alpha-Tocopherol)	200	ie
water	Vitamin B-6 (Pyridoxine-5-Phos.)	25 mg	Vitamin F (Unsaturated Fatty Acids		
water	Vitamin B-12 (Colabamin)	50 mcg	Vitamin K1 (Phytonadione)		
water	Vitamin H (Biotin)	100 mcg	Taurine	30	mg
water	Folic Acid	300 mcg	Tocotrienol	20	mg
water	Para-Aminobenzoic Acid (PABA)	50 mg	Boron (Citrate)	1	mg
water	Choline (Bitartrate)	50 mg	Calcium (Amino Acid Chelate)	50	mg
water	Inositol	50 mg	Iodine (Kelp)	100	mcg
water	Citrus Bioflavonoids	50 mg	Lithium (Citrate)	500	mcg
water	Pycnogenol	20 mg	Magnesium (Amino Acid Chelate)	150	mg
	Lipoic Acid	5 mg	Molybdenum (Molybdate)	200	mcg
	Coenzyme Q10	40 mg	Rubidium (Amino Acid Chelate)	500	mcg
	Procyanidine/Proanthocianidine (OPC)		Selenium (L-Selenomethionine)	200	mcg
	DMAE (Dimethylaminoethanol)		Strontium (Citrate)	1	mg
	NDGA (Nordihydroguaretic Acid		Vanadium (Ammonium Vanadate)	500	mcg
	Chromium (GTF)		Iron (Fumarate)	10	mg
	Potassium (Amino Acid Chelate)		Zinc (Citrate)	15	mg
	Copper (Gluconate)				
	Magnesium (Amino Acid Chelate)	150 mg			
	Manganese (Amino Acid Chelate)	5 mg			

Example 4

Women's formulation		Complex B		Complex A	
Complex A		Complex B		AM	PM
water	Vitamin C (Calcium Ascorbate)	fat	Vitamin A (Palmitate)	200 mg	4,000 ie
water	Vitamin B-1 (Thiamine)	fat	Beta Carotene (Provitamin A)	25 mg	10. mg
water	Vitamin B-2 (Riboflavin)	fat	Vitamin C (Ascorbyl Palmitate)	25 mg	200 mg
water	Vitamin B-3 (Nicotinamide/Niacin)	fat	Vitamin D3 (Cholecalciferol)	25 mg	400 ie
water	Vitamin B-5 (Pantothenic Acid)	fat	Vitamin E (D-Alpha-Tocopherol)	50 mg	200 ie
water	Vitamin B-6 (Pyridoxine-5-Phos.)	fat	Vitamin F (Unsaturated Fatty Acids)	25 mg	
water	Vitamin B-12 (Colabamin)	fat	Vitamin K1 (Phytonadione)	25 mcg	
water	Vitamin H (Biotin)		Taurine	100 mcg	50 mg
water	Folic Acid		Tocotrienol	500 mcg	20 mg
water	Para-Aminobenzoic Acid (PABA)		Boron (Citrate)	50 mg	1 mg
water	Choline (Bitartrate)		Calcium (Amino Acid Chelate)	40 mg	500 mg
water	Inositol		Iodine (Kelp)	50 mg	125 mcg
water	Citrus Bioflavonoids		Lithium (Citrate)	50 mg	500 mcg
water	Pycnogenol		Magnesium (Amino Acid Chelate)	20 mg	200 mg
	Lipoic Acid		Molybdenum (Molybdate)		300 mcg
	Coenzyme Q10		Rubidium (Amino Acid Chelate)	30 mg	500 mcg
	Procyanidine/Proanthocianidine (OPC)		Selenium (L-Selenomethionine)		200 mcg
	DMAE (Dimethyl aminoethanol)		Strontium (Citrate)		1 mg
	NDGA (Nordihydroguaric Acid		Vanadium (Ammonium vanadate)		300 mcg
	Chromium (GTF)		Iron (Fumarate)	100 mcg	15 mg
	Potassium (Amino Acid Chelate)		Zinc (Citrate)	100 mg	20 mg
	Copper (Gluconate)			2 mg	
	Magnesium (Amino Acid Chelate)			200 mg	
	Manganese (Amino Acid Chelate)			5 mg	

Example 5

Children, s over 1 year formulation

Complex A		Complex B	
	AM		PM
water		Vitamin A (Palmitate)	1.250 ie
water	75 mg	Beta Carotene (Provitamin A)	5 mg
water	5 mg	Vitamin C (Ascorbyl Palmitate)	75 mg
water	5 mg	Vitamin D3 (Cholecalciferol)	200 ie
water	10 mg	Vitamin E (D-Alpha-Tocopherol)	18 ie
water	10 mg	Vitamin F (Unsaturated Fatty Acids)	
water	5 mg	Vitamin K1 (Phytonadione)	1 mg
water	5 mcg	Taurine	
water	100 mcg	Tocotrienol	
water	200 mcg	Boron (Citrate)	300 mcg
water	1 mg	Calcium (Amino Acid Chelate)	50 mg
water	10 mg	Iodine (Kelp)	50 mcg
water	10 mg	Lithium (Citrate)	
water	10 mg	Magnesium (Amino Acid Chelate)	10 mg
		Molybdenum (Molybdate)	20 mcg
		Rubidium (Amino Acid Chelate)	
		Selenium (L-Selenomethionine)	50 mcg
		Strontium (Citrate)	0,5 mg
		Vanadium (Ammonium Vanadate)	20 mcg
	20 mcg	Iron (Fumarate)	2,5 mg
	1 mg	Zinc (Citrate)	4 mg
	0,5 mg		
	10 mg		
	1 mg		

Example 6

Over 50 years formulation		Complex A		Complex B		PM	
		AM					
water	Vitamin C (Calcium Ascorbate)	300 mg	fat	Vitamin A (Palmitate)	4,000	ie	
water	Vitamin B-1 (Thiamine)	25 mg	fat	Beta Carotene (Provitamin A)	15	mg	
water	Vitamin B-2 (Riboflavin)	25 mg	fat	Vitamin C (Ascorbyl Palmitate)	200	mg	
water	Vitamin B-3 (Niacinamide\Niacin)	70 mg	fat	Vitamin D3 (Cholecalciferol)	200	ie	
water	Vitamin B-5 (Pantothenic Acid)	100 mg	fat	Vitamin E (D-Alpha-Tocopherol)	400	ie	
water	Vitamin B-6 (Pyridoxine-5-Phos.)	25 mg	fat	Vitamin F (Unsaturated Fatty Acids)	15	mg	
water	Vitamin B-12 (Colabamin)	50 mcg	fat	Vitamin K1 (Phytonadione)	1	mg	
water	Vitamin B-15 (Calcium Pangamate)	30 mg		Taurine	30	mg	
water	Vitamin H (Biotin)	100 mcg		Tocotrienol	20	mg	
water	Folic Acid	400 mcg		Boron (Citrate)	1	mg	
water	Para-Aminobenzoic Acid (PABA)	50 mg		Calcium (Amino Acid Chelate)	500	mg	
water	Choline (Bitartrate)	50 mg		Iodine (Kelp)	150	mcg	
water	Inositol	50 mg		Lithium (Citrate)	500	mcg	
water	Citrus Bioflavonoids	50 mg		Magnesium (Amino Acid Chelate)	150	mg	
	Pycnogenol	20 mg		Molybdenum (Molybdate)	200	mcg	
	Lipoic Acid	5 mg		Rubidium (Amino Chelate)	500	mcg	
	Coenzyme Q10	30 mg		Selenium (L-Selenomethionine)	200	mcg	
	Procyanidine/Proanthocianidine (OPC)	40 mg		Strontium (Citrate)	1	mg	
	DMAE (Dimethylaminoethanol)	50 mg		Vanadium (Ammoniumvanadate)	500	mcg	
	NDGA (Nordihydroguaretic Acid	50 mg		Iron (Fumarate)	15	mg	
	Chromium (GTF)	100 mcg		Zinc (Citrate)	15	mg	
	Potassium (Amino Acid Chelate)	150 mg					
	Copper (Amino Acid Chelate)	2 mg					
	Magnesium (Amino Acid Chelate)	150 mg					
	Manganese (Amino Acid Chelate)	7 mg					
	Soyagerm complex	300 mg					
	Phosphorus (Calcium Phosphate)	100 mg					

Example 7

Sports formulation		Complex A		Complex B		PM
		AM				
water	Vitamin C (Calcium Ascorbate)	300 mg	fat	Vitamin A (Palmitate)	6,000	ie
water	Vitamin B-1 (Thiamine)	40 mg	fat	Beta Carotene (Provitamin A)	15	mg
water	Vitamin B-2 (Riboflavin)	40 mg	fat	Vitamin C (Ascorbyl Palmitate)	250	mg
water	Vitamin B-3 (Niacinamide/Niacin)	80 mg	fat	Vitamin D3 (Cholecalciferol)	200	ie
water	Vitamin B-5 (Calcium Pantothenate)	80 mg	fat	Vitamin E (D-Alpha-Tocopherol)	400	ie
water	Vitamin B-6 (Pyridoxine-5-Phos.)	40 mg	fat	Vitamin F (Unsaturated Fatty Acids)		
water	Vitamin B-12 (Cyano Cobalmine)	80 mcg	fat	Vitamin K1 (Phytonadione)	1	mg
water	Vitamin B-15 (Calcium Pangamate)	40 mg	fat	Taurine	50	mg
water	Vitamin H (Biotin)	200 mcg		Tocotrienol	40	mg
water	Folic Acid	400 mcg		Boron (Citrate)	2	mg
water	Para-Aminobenzoic Acid (PABA)	50 mg		Calcium (Amino Acid Chelate)	250	mg
water	Choline (Bitartrate)	100 mg		Iodine (Kelp)	150	mcg
water	Inositol	100 mg		Lithium (Citrate)	500	mcg
water	Citrus Bioflavonoids	100 mg		Magnesium (Amino Acid Chelate)	150	mg
water	Pycnogenol	40 mg		Molybdenum (Molybdate)	100	mcg
	Lipoic Acid	10 mg		Rubidium (Amino Acid Chelate)	500	mcg
	Coenzyme Q10	20 mg		Selenium (L-Selenomethionine)	200	mcg
	Procyanidine/Proanthocianidine (OPC)	75 mg		Strontium (Citrate)	2	mg
	DMAE (Dimethylaminoethanol)			Vanadium (Ammonium Vanadate)	100	mcg
	NDGA (Nordihydroguaretic Acid)			Iron (Fumarate)	15	mg
	Chromium (GTF)	100 mcg		Zinc (Citrate)	15	mg
	Potassium (Amino Acid Chelate)	150 mg		Coenzyme Q10	20	mg
	Copper (Gluconate)	2 mg		L-Glutamine	25	mg
	Magnesium (Amino Acid Chelate)	150 mg		L-Cysteine	50	mg
	Mangawese (Amino Acid Chelate)	10 mg		L-Leucine	100	mg
				L-Isoleucine	100	mg
				L-Valine	100	mg
				L-Carnitine	50	mg
				L- Methionine	50	mg

It will be understood, that the vitamin preparations according to the invention may be varied in several ways by adding or deleting certain ingredients to or from the compositions A and B, or by modifying amounts as illustrated in the Examples. All such variants are meant to be encompassed by the scope of the invention, which is determined by the claims that
5 follow.

Claims

1. Dietary supplement composition, said dietary supplement composition comprising at least two compositions A and B which are to be taken at different points in time, 5 wherein composition A consists essentially of water soluble vitamins and composition B consists essentially of fat soluble vitamins.

2. Dietary supplement composition according to claim 1, wherein composition A is taken in the morning and composition B is taken 9-17 hours after composition A.

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3. Dietary supplement composition according to claim 1 or 2, wherein composition A comprises as vitamins predominantly vitamin C, vitamin B-1, vitamin B-2, vitamin B-3, vitamin B-5, vitamin B-6, vitamin B-12, vitamin B-15, and vitamin H, and composition B comprises as vitamins predominantly vitamin A, provitamin A, vitamin C, vitamin D3, and 15 vitamin K1.

4. Dietary supplement composition according to any one of claims 1 to 3, wherein composition A further comprises one or more of the minerals chromium, potassium, copper, magnesium, and manganese, in a suitable form for administration.

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5. Dietary supplement composition according to any one of claims 1 to 3, wherein composition B further comprises one or more of the minerals borium, calcium, iodine, lithium, magnesium, molybdenum, rubidium, selenium, strontium, vanadium, iron, and zinc, in a suitable form for administration.

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6. Dietary supplement composition according to any one of claims 1 to 4, wherein composition A further comprises one or more compounds selected from the group consisting of folic acid, p-aminobenzoic acid, choline, inositol, citrus bioflavonoids, pycnogenol, lipoic acid, coenzyme Q10, proanthocyanidin, dimethyl aminoethanol, and nordihydroguareseacid, in 30 a suitable form for administration.

7. Dietary supplement composition according to any one of claims 1 to 3 and 5, wherein composition B further comprises taurin and/or tocotrienol, in a suitable form for administration.

8. Dietary supplement composition according to any one of the preceding claims, wherein this preparation is comprised of compositions A and B, essentially as described in Examples 1 to 7, respectively.

5 9. Composition A of the dietary supplement composition as defined in any one of the preceding claims.

10. Composition B of the dietary supplement composition as defined in any one of the preceding claims.

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(54) Title: MODULAR SYSTEM OF DIETARY SUPPLEMENT COMPOSITIONS COMPRISING VITAMINS

(57) Abstract: The invention pertains to a dietary supplement composition, comprising at least two compositions A and B which are to be taken at different points in time, wherein composition A consists essentially of water soluble vitamins and composition B consists essentially of fat soluble vitamins. Composition A is an energy-rich composition, comprised of water soluble vitamins, supplemented with further ingredients and minerals, which is taken in the morning and preferably immediately after breakfast. Composition B is a composition for recovery of the cells in the rest phase (i.e. during the night), comprised of fat soluble vitamins, supplemented with other ingredients and minerals, which is taken in the evening and preferably immediately after dinner. Composition A comprises as vitamins predominantly vitamin C, vitamin B-1, vitamin B-2, vitamin B-3, vitamin B-5, vitamin B-6, vitamin B-12, vitamin B-15, and vitamin H, and composition B comprises as vitamins predominantly vitamin A, provitamin A, vitamin C, vitamin D3, and vitamin K1.

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C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
P,X	WO 01 43571 A (HOHULIN SCOTT CONRAD) 21 June 2001 (2001-06-21) claims 7,9,20	1-10
X	US 5 976 568 A (RILEY PATRICIA A) 2 November 1999 (1999-11-02) column 11, line 56-62; claim 3	1-10
X	US 5 948 443 A (CHRISTAKIS GEORGE ET AL) 7 September 1999 (1999-09-07) column 4, line 49-56; tables II,III column 7, line 39 -column 8, line 8 column 11, line 47-59	1-10
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Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	DATABASE WPI Section Ch, Week 198441 Derwent Publications Ltd., London, GB; Class A96, AN 1984-253081 XP002224428 & JP 59 152327 A (OTSUKA PHARM CO LTD), 31 August 1984 (1984-08-31) abstract ---	9
X	WO 00 30477 A (FUCHS NORBERT ;WALLNER REINHARD (AT)) 2 June 2000 (2000-06-02) claims 3-5 ---	9
X	US 3 436 459 A (KLAUI HEINRICH) 1 April 1969 (1969-04-01) claim 1 ---	10
A	EP 0 820 703 A (VALPHARMA SA) 28 January 1998 (1998-01-28) claims 1-5 ---	
A	US 5 514 382 A (SULTENFUSS SHERRY) 7 May 1996 (1996-05-07) the whole document ---	
A	US 5 906 833 A (KLATZ RONALD M) 25 May 1999 (1999-05-25) the whole document ---	
A	US 5 869 084 A (PARADISSIS GEORGE N ET AL) 9 February 1999 (1999-02-09) the whole document ---	
A	EP 0 799 579 A (GOUPIJ JEAN JACQUES) 8 October 1997 (1997-10-08) the whole document -----	

INTERNATIONAL SEARCH REPORT

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Patent document cited in search report		Publication date	Patent family member(s)	Publication date
WO 0143571	A	21-06-2001	AU 2431801 A WO 0143571 A1	25-06-2001 21-06-2001
US 5976568	A	02-11-1999	NONE	
US 5948443	A	07-09-1999	US 2002098253 A1 US 5925348 A	25-07-2002 20-07-1999
JP 59152327	A	31-08-1984	JP 1674998 C JP 3037521 B	26-06-1992 05-06-1991
WO 0030477	A	02-06-2000	WO 0030477 A1 EP 1130980 A1 JP 2002530100 T US 2001033881 A1	02-06-2000 12-09-2001 17-09-2002 25-10-2001
US 3436459	A	01-04-1969	CH 437995 A BE 654925 A DE 1210127 B DK 109224 C FR 4084 M FR 1412841 A GB 1041890 A IL 22301 A NL 6412482 A , B	15-06-1967 28-04-1965 03-02-1966 01-04-1968 01-10-1965 07-09-1966 20-06-1968 03-05-1965
EP 0820703	A	28-01-1998	IT MI961525 A1 EP 0820703 A1	22-01-1998 28-01-1998
US 5514382	A	07-05-1996	NONE	
US 5906833	A	25-05-1999	AU 5934896 A CA 2220926 A1 CN 1190332 A EP 0828438 A1 JP 11505723 T WO 9637118 A1	11-12-1996 28-11-1996 12-08-1998 18-03-1998 25-05-1999 28-11-1996
US 5869084	A	09-02-1999	AU 2862295 A WO 9535098 A1	15-01-1996 28-12-1995
EP 0799579	A	08-10-1997	FR 2747017 A1 AT 219890 T DE 69713657 D1 EP 0799579 A1	10-10-1997 15-07-2002 08-08-2002 08-10-1997